

What is claimed is:

1. A pneumatic tire where a plurality of longitudinal grooves extending in a tire circumferential direction and a plurality of lateral grooves extending in a tire widthwise direction are provided in a tread portion, a plurality of blocks are defined by these longitudinal and lateral grooves, and a plurality of sipes extending in the tire widthwise direction are provided to each of the blocks,

wherein, with regard to each of the sipes,

a zigzag shape with an amplitude in the tire circumferential direction is formed on a tread surface,

bent portions ranging in the tire widthwise direction while bent in the tire circumferential direction are formed inside the block at at least two positions on a tire radial direction, and

a zigzag shape with an amplitude in the tire radial direction is formed in each of the bent portions.

2. The pneumatic tire according to claim 1, wherein a tilt angle of the sipe in the tire circumferential direction to a normal-line direction of the tread surface is set in a range of 10 to 45 degrees, and the amplitude of the bent portions of the sipe in the tire radial direction is set in a range of 0.5 to 5.0 mm.

3. A pneumatic tire where a plurality of longitudinal grooves extending in a tire circumferential direction and a plurality of lateral grooves extending in a tire widthwise direction are provided in a tread portion, a plurality of blocks are defined by these longitudinal and lateral grooves, and a plurality of sipes extending in the tire widthwise direction are provided to each of the

blocks,

wherein, with regard to each of the sipes,

a zigzag shape with an amplitude in the tire circumferential direction is formed on a tread surface,

bent portions ranging in the tire widthwise direction while bent in the tire circumferential direction are formed inside the block at at least two positions in the tire radial direction, and

a zigzag shape with an amplitude in the tire radial direction is formed in each of the bent portions, and

wherein, while the amplitude of the sipe in the tire circumferential direction is set constant, a tilt angle of the sipe in the tire circumferential direction to a normal-line direction of the tread surface is set smaller at a portion closer to the bottom of the sipe than that in a portion closer to the tread surface, and the amplitude of the bent portions in the tire radial direction is set larger at a portion closer to the bottom of the sipe than that in a portion closer to the tread surface.

4. The pneumatic tire according to claim 3, wherein tilt angles of the sipe in the tire circumferential direction to the normal-line direction of the tread surface are not smaller than 30 degrees, but not larger than 45 degrees in the portion closest to the tread surface, and not smaller than 15 degrees, but smaller than 30 degrees in the portion closest to the sipe bottom, respectively.

5. The pneumatic tire according to any one of claims 3 and 4, wherein, the amplitude of the bent portions in the tire radial direction is set not less than 0.5 mm in the portion closest to the tread surface, and is set not more

than 3.5 mm in the portion closest to the sipe bottom.

6. A pneumatic tire where a plurality of longitudinal grooves extending in a tire circumferential direction and a plurality of lateral grooves extending in a tire widthwise direction are provided in a tread portion, a plurality of blocks are defined by these longitudinal and lateral grooves, and a plurality of sipes extending in the tire widthwise direction are provided to each of the blocks,

wherein, with regard to each of the sipes,

a zigzag shape with an amplitude in the tire circumferential direction is formed on a tread surface,

bent portions ranging in the tire widthwise direction while bent in the tire circumferential direction are formed inside the block at at least two positions in the tire radial direction, and

a zigzag shape with an amplitude in the tire radial direction is formed in each of the bent portions, and

wherein, while intervals between the bent portions in the tire radial direction are set uniform, the amplitude in the tire circumferential direction is set smaller in a portion closer to the bottom of the sipe.

7. The pneumatic tire according to claim 6, wherein, if it is assumed that there are a reference line passing through a position representing an outer limit of the amplitude of the sipe on a tread surface and extending in a normal-line direction of the tread surface, and an auxiliary line defining, along the depth direction of the sipe, the amplitude of the sipe in the tire circumferential direction, a distance at the sipe bottom between the reference line and the auxiliary line is set more than 0 % and not more than

50 % of the amplitude of the sipe in the tire circumferential direction on the tread surface.

8. The pneumatic tire according to claim 6, wherein, if it is assumed that there are a reference line passing through a position representing an outer limit of the amplitude of the sipe on the tread surface and extending in a normal-line direction of the tread surface, an upper auxiliary line defining, in the upper portion of the sipe, the amplitude of the sipe in the tire circumferential direction, and a lower auxiliary line defining, in the lower portion of the sipe, the amplitude of the sipe in the tire circumferential direction, tilt angles respectively of the upper and lower auxiliary lines to the reference line are set different from each other, and the tilt angle of the lower auxiliary line is set larger than that of the upper auxiliary line.

9. The pneumatic tire according to claim 8, wherein a distance at the sipe bottom between the reference line and the upper auxiliary line is set more than 0 % and not more than 25 % of the amplitude of the sipe in the tire circumferential direction on the tread surface, and a distance at the sipe bottom between the reference line and the lower auxiliary line is set not less than 25 % and not more than 50 % of the amplitude of the sipe in the tire circumferential direction on the tread surface.

10. The pneumatic tire according to any one of claims 6 to 9, wherein, on condition that the pneumatic tire is provided on a superficial portion of the block with a plurality of shallow grooves, whose depth is in a range of 0.1 to 1.0 mm, and which are shallower than the sipes, a vertical portion extending in a normal-line direction of the tread surface is provided to the sipe in a section where the sipe joins to the tread surface.

11. The pneumatic tire according to claim 10, wherein a height of the vertical portion of the sipe is set not less than the depth of the shallow groove.